

undercoating layer to strengthen bonding or the adhesion of the lubricating layer that exists on top of the porous layer at high temperatures.

While the claimed lubricant does impregnate the porous layer as is the case in Kawashima, the invention also uses another ability of the porous metallic undercoating layer to further strengthen the adhesion of a lubricating layer **placed thereon**. The firm bonding of the lubricating layer onto the porous metallic undercoating layer results in unexpected results in the form of improved galling at high temperatures. These results can be seen in Table 2, wherein each of the comparative examples falls outside the claimed parameters and failing to achieve the performance of the examples following the invention.

It is respectfully argued that there is absolutely no expectation of this result from the teachings of the prior art. In Kawashima, it is a matter of course that a conventional grease containing heavy metal is applied to the porous layer in order to prevent galling. This means that the incorporation of the heavy metal is essential when a porous layer is provided on the metal surface of a metal seal portion of a pin and/or box. In the absence of the heavy metal, there is no expectation one way or the other as to how the seal would perform in terms of galling performance under usual conditions. Moreover, even if one were to assume that removing the heavy metals would still create an expectation of galling resistance, there would be no expectation concerning galling performance improvement at high temperature. Again, this is totally unexpected.

The Bestolife article does not make up for the failings in Kawashima and does not demonstrate that the showing in the specification would be expected. Bestolife is silent regarding whether a lubricant free of heavy metal is effective to prevent galling under usual conditions or at high temperatures. If anything, the expectation of one of

skill in the art based on the teachings of Kawashima is that a lubricant lacking heavy metals would not be effective to prevent galling under usual conditions. Even more so, there is no expectation that removing the heavy metal from the lubricant would result in improved galling at high temperatures. Consequently, neither Bestolife nor Kawashima demonstrate that removing the heavy metals from the lubricant of Kawashima or using a lubricant that does not contain heavy metals would perform as shown in Table 2 of the instant specification. Without this expectation, the inventor's discovery that use of a lubricant without heavy metals in combination with the metallic undercoating as claimed is worthy of patent protection.

Moreover, the applied references at most suggest impregnating the porous material with the heavy metals but do not suggest combining a lubricant that lacks heavy metal with a porous metallic undercoating whereby the lubricant forms a top layer on the porous material for firmly bonding the top coat of lubricant to the porous material for improved high temperature galling performance.

In summary, it is contended that the showing in the specification regarding the high temperature galling resistance of a threaded joint having the claimed lubricating and metallic undercoating layers is unexpected. This showing effectively rebuts any allegation that the combination of Kawashima and Bestolife establish a *prima facie* case of obviousness against the claims.

Accordingly, the Examiner is requested to take this supplemental response into account in connection with the earlier filed response when examining this application, and pass all pending claims onto issuance.

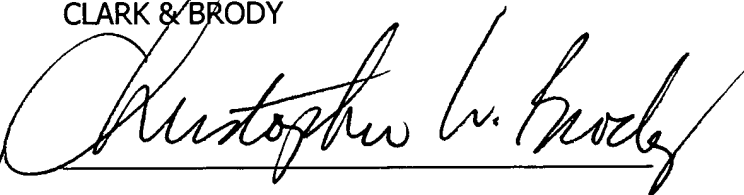
Again, reconsideration and allowance of this application is respectfully solicited.

Serial No.: 10/626,621

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Respectfully submitted,  
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Date: June 17, 2005